Re-evaluation Note REV2010-16

Endosulfan

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The purpose of this Note is to inform stakeholders of upcoming changes to the regulatory status of endosulfan and to request use-related information for Health Canada's PMRA to consider during the development of plans for the phase-out of endosulfan.

1.0 Overview of Endosulfan Re-evaluation

Endosulfan is an organochlorine insecticide and acaracide used to control a broad range of insect pests and arthropod pests on a wide variety of greenhouse food, greenhouse ornamental, feed, food and outdoor ornamental crops as well as outside food processing plants to control sap beetles. It is applied using airblast, boom and handheld sprayers, foggers, treated bait, as well as treated root dip solution by farmers, farm workers and professional applicators.

The PMRA announced the re-evaluation of endosulfan (REV2002-04) in 2002. Since then, interim risk mitigation measures were proposed (PACR2004-21, REV2009-03) and implemented (REV2009-09). The Preliminary Risk and Value Assessments (REV2007-13) indicated a level of concern for workers involved in many application scenarios (airblast, ground-boom, high-pressure hand-wand, bait application, root dipping), and unfeasible restricted entry intervals for many application scenarios. The document also reported a risk to non-target organisms (bees, birds, small mammals, fish, aquatic invertebrates and amphibians) that are exposed in treated fields or adjacent water bodies.

The preliminary assessment also included an analysis of the persistence and bioaccumulation of endosulfan and proposed a Track 1 designation for this pesticide under the federal Toxic Substances Management Policy (TSMP). A Track 1 designation requires virtual elimination of a substance, as outlined in *The PMRA's Strategy for Implementing the Toxic Substances Management Policy* (DIR99-03).

After careful consideration of comments received subsequent to the publication of the Preliminary Risk and Value Assessments, the PMRA has determined that the identified risk concerns to human health and the environment remain. The PMRA, in close consultation with experts from Environment Canada, has also concluded that endosulfan meets criteria of a Track 1 substance. Consequently, the PMRA decided that the use of endosulfan can no longer be supported.

Conclusions under TSMP are consistent with Canadian positions taken under international agreements concerning persistent organic pollutants, e.g. UNECE-LRTAP and the Stockholm Convention.

2.0 Phase-out of Endosulfan

The Canadian registrants of endosulfan have signalled their intentions to phase out all uses of this pesticide in Canada. The PMRA is discussing the details of a stepwise phase-out process with registrants.

Later this year, after considering all information received in response to this document, the PMRA will publish the final time frame for a stepwise phase-out of endosulfan in Canada.

Appendix I lists all endosulfan products that are registered under the authority of the Pest Control Products Act excluding those products for which registration is already in the process of being discontinued. Appendix II lists the Commercial Class product uses for endosulfan, excluding those uses identified for removal from the use pattern in 2009 (REV2009-09) and those uses which are limited to products currently in the process of being discontinued.

3.0 Request for Information

The PMRA is specifically requesting the following information to help determine the critical uses of endosulfan and gauge the need to initiate and assist in the development of transition strategies in proceeding towards virtual elimination of endosulfan:

- Quantitative and/or qualitative information on the economic and social importance of endosulfan to specific industries;
- Feedback on the availability and viability of alternative chemical and nonchemical pest management practices for the registered site and pest combinations.

The PMRA will accept written comments up to 60 days from the date of publication of this document. Please forward all comments to the PMRA Publications group (please see contact information on the cover page of this document).

Appendix I Registered endosulfan products in Canada as of February 18, 2010 according to the PMRA. The list excludes products with a submission for discontinuation.

Registration Number	Marketing Class	Registrant	Product Name	Formulation Type	Guarantee
24993	Technical Grade Active Ingredient	Bayer CropScience Inc.	Endosulfan Technical Active Insecticide	Solid	96 %
21712	Technical Grade Active Ingredient	Makhteshim Agan of North America Inc.	Thionex (Endosulfan) Technical	Solid	95 %
25675	Manufacturing Concentrate	Bayer CropScience Inc.	Thiodan Manufacturing Use Product	Wettable Powder	50 %
23453	Commercial	Makhteshim Agan of North America Inc.	Thionex EC (Endosulfan) Insecticide	Emulsifiable Concentrate	400 g/L
15333	Commercial	Makhteshim Agan of North America Inc.	Thionex 50WP Endosulfan Commercial Insecticide	Wettable Powder	50 %
14617	Commercial	United Agri Products Canada Inc.	Thionex 50W Wettable Powder Insecticide	Wettable Powder	50 %

Appendix II Registered Commercial Class uses of endosulfan in Canada (as of February 18, 2010). The table excludes uses for discontinued products or products with a submission for discontinuation and those removed from the use pattern in REV2009-09.

Site(s)	Pests(s)	Formulation Type	Application Methods and Equipment	Application Rate (g a.i./ha or g a.i./1000 L)		Maximum Number of Applications per Year[1]	Minimum Number of Days Between Applications[1]
				Maximum Single[1]	Maximum Cumulative[1]		
Use Site Category (USC) 5: Greenhouse Food Crops							
Cucumber, tomato	Aphids, whitefly	Emulsifiable Concentrate, Wettable Powder	Conventional ground application equipment	500 (EC) 750 (WP)	Not able to calculate as no limit to the number of applications is provided.	Apply as necessary	Not stated on labels
Use Site Category (USC) 6: Greenhouse Ornamental Crops							
Ornamentals	Aphids, cyclamen mite, elm leaf beetle, rose chafer, spruce gall aphid, whitefly,	Emulsifiable Concentrate, Wettable Powder	Conventional ground application equipment	700 g/1000 L (EC) 500 g/1000 L (WP)	Not able to calculate as no limit to the number of applications is provided.	Not stated on the labels	Not stated on the labels
	Black vine weevil	Wettable Powder		500 g/1000 L (WP)			
Japanese yew	black vine weevil			750 g/1000 L (WP)			
Use Site Category (USC) 14: Terrestrial Food Crops							
Apple, pear (Eastern Canada)	Green apple aphid, rosy apple aphid, pearleaf blister mite, tarnished plant bug, woolly apple aphid	Wettable Powder	Conventional ground application equipment	2250	2800[2]	2	Not stated on labels
	Rust mite, pear psylla, codling moth			2800[2]		Not stated on label	
	White apple leafhopper, potato leafhopper (Minor Use Registration)			1300	1300	1	Not applicable

Site(s)	Pests(s)	Formulation Type	Application Methods and Equipment	Application Rate (g a.i./ha or g a.i./1000 L)		Maximum Number of Applications per Year[1]	Minimum Number of Days Between Applications[1]
				Maximum Single[1]	Maximum Cumulative[1]		
Use Site Category (USC) 14: Terrestrial Food Crops							
Apple, pear (British Columbia)	Green apple aphid, leafhoppers, lygus bugs, rosy apple aphid	Wettable Powder	Conventional ground application equipment	1625	2800[2]	Not stated on label	Not stated on labels
	Pearleaf blister mite, rust mites, woolly apple aphid			2250			
	White apple leafhopper, potato leafhopper			1300	1300	1	Not applicable
Apricot, cherry, peach, plum	Black cherry aphid, eyespotted bud moth, green peach aphid, leafhoppers, mealy plum aphid, peach silver mite, plant bugs, plum rust mite, stink bugs, twig borers	Wettable Powder		2250	2800[2]	2	Not stated on labels
	Lesser peachtree borer, peachtree borer (root borer)			2800[2]	2800[2]	3 Eastern Canada 2 British Columbia	21 (Eastern Canada) Not Stated (British Columbia)
Bean (dry)	Bean aphid, Mexican bean beetle, potato leafhopper	Emulsifiable Concentrate		1000	2000	2[2]	Not stated on labels
Celery	Aphids, cabbage looper, imported cabbageworm, tarnished plant bug	Emulsifiable Concentrate		800	1100[2]	Not stated on labels	Not stated on labels
		Wettable Powder		875			
Cole crops (broccoli, Brussels sprouts, cabbage, cauliflower)	Aphids, cabbage looper, diamondback moth (larvae), flea beetles, imported cabbageworm	Emulsifiable Concentrate		800	1600[2]	2[2]	Not stated on labels
		Wettable Powder		875	1750[2]		

Site(s)	Pests(s)	Formulation Type	Application Methods and Equipment	Application Rate (g a.i./ha or g a.i./1000 L)		Maximum Number of Applications per Year[1]	Minimum Number of Days Between Applications[1]
				Maximum Single[1]	Maximum Cumulative[1]		
Use Site Category (USC) 14: Terrestrial Food Crops							
Corn (sweet)	Corn leaf aphid	Emulsifiable Concentrate	Conventional ground application equipment	1100	1100	1[2]	Not applicable
	Corn earworm			1600	1600		
Cucumber, melon, pumpkin, squash	Aphids, cucumber beetles, potato flea beetle, squash vine borer	Emulsifiable Concentrate		600	2200[2]	4[2]	7 days for squash vine borer. Not stated for other pests.
		Wettable Powder		550			
	Tarnished plant bug (Minor Use Registration)	Wettable Powder					Not stated
Eggplant, pepper	Aphids, Colorado potato beetle, flea beetles, hornworms, leafhoppers, pepper maggot	Emulsifiable Concentrate		1000	2000	2[2]	Not stated on the labels
		Wettable Powder		1125	2200[2]	2[2]	
	Tomato fruitworm	Emulsifiable Concentrate		1200			
		Wettable Powder		1125			
Grape	Grape phylloxera (leaf form), leafhoppers	Wettable Powder		1250	2500	2[2]	Not stated on the labels
Lettuce (head)	Aphids, cabbage looper, cabbageworms, tarnished plant bug	Emulsifiable Concentrate		800	1600	2[2]	Not stated on the labels
		Wettable Powder		875	1750		
Dry pea (canning, seed)	Pea aphid, pea weevil	Emulsifiable Concentrate		800	1600	2[2]	Not stated on the labels
Potato	Aphids, Colorado potato beetle, leafhoppers, potato flea beetle, tuber flea beetle	Emulsifiable Concentrate		600	2200[2]	4[2]	Not stated on the labels
		Wettable Powder		750			
	Tarnished plant bug	Emulsifiable Concentrate		800			
		Wettable Powder		875			

Site(s)	Pests(s)	Formulation Type	Application Methods and Equipment	Application Rate (g a.i./ha or g a.i./1000 L)		Maximum Number of Applications per Year[1]	Minimum Number of Days Between Applications[1]
				Maximum Single[1]	Maximum Cumulative[1]		
Use Site Category (USC) 14: Terrestrial Food Crops							
Rutabaga, turnip	Aphids, cabbage looper, diamondback moth, flea beetles, imported cabbageworm	Emulsifiable Concentrate	Conventional ground application equipment	800	1600	2	Not stated on the labels
		Wettable Powder		875	1750		
Strawberry	Cyclamen mite	Emulsifiable Concentrate, Wettable Powder		2000[3]	4000[3]	2	Not stated on labels
	Meadow spittlebug	Emulsifiable Concentrate		1000	2000[2]	2[2]	
		Wettable Powder		2000[3]	2000[3]	1	
	Strawberry aphid	Emulsifiable Concentrate		1000	2000[2]	2[2]	
		Wettable Powder		2000[3]	4000[3]		
	Tarnished plant bug	Emulsifiable Concentrate		1000	2000	2	10
		Wettable Powder		2000[3]	4000[3]		
Sugar beet	Beet webworm, green peach aphid	Emulsifiable Concentrate		1100	1100	1	Not applicable
Tomato	Green peach aphid, Colorado potato beetle, flea beetles, hornworms, leafhoppers, pepper maggot	Emulsifiable Concentrate		1000	2200[2]	4[2]	Not stated on the labels
	tomato fruitworm	Emulsifiable Concentrate		1200[2]	2200[2]	4[2]	Not stated on the labels
Use Site Category (USC) 20: Structural							
Food processing plant (outdoor areas)	Sap beetle (*Glischrochilus quadrisignatus*)	Wettable Powder	Bait	250 g/22.5 kg of bait	Not able to calculate as no limit to the number of applications is provided.	Not stated on the labels	7

Site(s)	Pests(s)	Formulation Type	Application Methods and Equipment	Application Rate (g a.i./ha or g a.i./1000 L)		Maximum Number of Applications per Year[1]	Minimum Number of Days Between Applications[1]
				Maximum Single[1]	Maximum Cumulative[1]		
Use Site Category (USC) 27: Outdoor ornamentals							
Ornamentals	Aphids, black vine weevil, cyclamen mite, elm leaf beetle rose chafer, spruce gall aphid, whitefly	Emulsifiable Concentrate, Wettable Powder	Conventional ground application equipment	700 g/1000 L (EC) 500 g/1000 L (WP)	2800[2]	Not stated on the labels	Not stated on the labels
Japanese yew	Black vine weevil			760 g/1000 L (EC) 750 g/1000 L (WP)			

1 Application information is from the registered labels unless otherwise indicated.

2 Use limitation published in REV2009-09.

3 The maximum single application rate and maximum seasonal application rate were revised based upon comments from stakeholders in response to PACR2004-21 and REV2007-13.